MCLAB
Molecular Cloning Laboratories

User Manual

Version 1.0
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Product name: DNA polymerase, thermotoga neapolitana

Cat #: DPTN-100, DPTN-200, DPTN-300, DPTN-OEM

Description:

Due to its thermo-stable nature, DNA polymerase (thermotoga neapolitana) was identified(1) as an enzyme able to withstand the protein-denaturing conditions (high temperature) required during PCR(2). Similar to Escherichia coli DNA polymerase I, but unlike Taq DNA polymerase, Tne DNA polymerase contains both 3'-> 5' and 5'-> 3'- exonulease activity. Therefore it replaced the DNA polymerase from E. coli originally used in PCR (3). Taq's optimum temperature for activity is 75-80°C, with a half-life of 9 minutes at 97.5°C, and can replicate a 1000 bp strand of DNA in less than 10 seconds at 72°C(4).
The DNA products have an A (adenine) overhangs at their 3' ends. This may be useful in TA cloning, whereby a cloning vector (such as a plasmid) that has a T (thymine) 3'- overhang is used, which complements with the A overhang of the PCR product, thus enabling ligation of the PCR product into the plasmid vector.

Application:

- PCR (ordinary and high-throughput)
- Primer Extension
- Microarray Analysis
- Denaturing high performance liquid chromatography (DHPLC)

Source:

Thermotoga neapolitana (Tne) DNA polymerase belongs to the DNA polymerase I (Pol I) family.

Recommended Reaction Conditions:

94°C, 1 minute. -> (94°C, 10 seconds. -> 55°C, 30 seconds. ->72°C, 30 seconds.) for 25 cycles.

Recommended Storage Conditions: -20°C

Reference:

1. Chien A, Edgar DB, Trela JM (1976). "Deoxyribonucleic acid polymerase from the extreme thermophile Thermus aquaticus". J. Bact. 127 (3): 15507. PMC 232952. PMID 8432.
2.Saiki, RK; et al. (1988). "Primer-directed enzymatic amplification of DNA with a thermostable DNA polymerase.". Science 239 (4839): 48791. doi:10.1126/science.2448875. PMID 2448875.
3. Saiki, RK; et al. (1985). "Enzymatic amplification of beta-globin genomic sequences and restriction site analysis for diagnosis of sickle cell anemia". Science 230 (4732): 1350 doi:10.1126/science.2999980. PMID 2999980.
4. Lawyer FC, et al. (1993). "High-level expression, purification, and enzymatic characterization of full-length Thermus aquaticus DNA polymerase ...". PCR Methods Appl. 2 (4): 27587. PMID 8324500.